CURRENT CLAIMS

Please amend claims 1, 4-6, and 10-14 as follows:

1. (currently amended) A method for recursive ray casting, the method comprising:

providing a ray bundle of a selected position, direction and size;

conducting a bundle proximity test of a selected proximity at the selected position; and

advancing the ray bundle a first casting distance when the bundle proximity test is negative.

2. (original) The method of claim 1, wherein the first casting distance corresponds to the selected proximity.

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3. (original) The method of claim 1, wherein the size of the ray bundle corresponds to the selected proximity.

4. (currently amended) The method of claim 1, further comprising advancing a second casting distance when the bundle proximity test is positive.

5. (currently amended) The method of claim 1, further comprising retreating a second

6. (currently amended) The method of claim 1, further comprising subdividing the ray bundle into child bundles when the bundle proximity test is positive.

7. (original) The method of claim 6, further comprising traversing and subdividing until each child bundle is a single ray.

8. (original) The method of claim 6, wherein subdividing comprises partitioning along the largest ray bundle dimension.

9. (original) The method of claim 6, wherein subdividing comprises partitioning along each ray bundle dimension.

10. (currently amended) The method of claim 6, further comprising combining child bundles of a subdivided ray bundle when the bundle proximity test of the ray bundle is negative.

11. (currently amended) The method of claim 1, wherein the bundle proximity test comprises testing boolean flags.

13. (currently amended) The method of claim 1, wherein the bundle proximity test comprises accessing a list of proximate objects.

14. (currently amended) A method for recursive ray casting, the method comprising:

providing a ray bundle of a selected position, direction and size;

conducting a bundle proximity test of a selected proximity at the selected position;

advancing the ray bundle a first casting distance when the bundle proximity test is negative, the first casting distance and the size of the ray bundle corresponding to the selected proximity;

retreating a second casting distance and subdividing the ray bundle into child bundles when the bundle proximity test is positive; and

advancing, subdividing and retreating until each child bundle is a single ray.

15. (original) An apparatus for recursive ray casting, the apparatus comprising:

a proximity tester configured to receive a bundle position and provide a first hit signal indicating whether the bundle position is proximate to a graphical object; and

a bundle caster configured to advance the bundle position.

16. (original) The apparatus of claim 15, further comprising an occlusion detector operably connected to the bundle caster, the occlusion detector configured to receive a pixel set descriptor and a minimum z-depth, and to provide a mask indicating which pixels within the pixel set are known to be occluded.

17. (original) The apparatus of claim 16, wherein the pixel set is defined by an area selected from a scanline span, a rectangle, and a triangle.

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18. (original) The apparatus of claim 16, wherein the occlusion detector is configured to operate at a lower depth resolution than the bundle caster.

19. (original) The apparatus of claim 15, wherein the bundle caster comprises at least one register file, each register file thereof coupled to an ALU.

20. (original) The apparatus of claim 15, further comprising a collision tester configured to receive a ray position and provide a second hit signal indicating whether the ray position is on or within the graphical object.

22. (original) The apparatus of claim 21, wherein the ray caster comprises at least one register file, each register file thereof coupled to an ALU.

23. (original) The apparatus of claim 22, wherein the ray caster is operably connected to the occlusion detector.

24. (original) The apparatus of claim 23, wherein the occlusion detector comprises:

a z-buffer configured to store an occlusion depth for each of a plurality of pixels, the occlusion depth being a low resolution representation of pixel depth;

a register configured to receive a pixel set descriptor describing a set of pixels including a minimum depth for the set; and

a comparator configured to access the z-buffer and compare the minimum depth with the occlusion depth for each pixel within the set of pixels.